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BPISAE RESEARCH ACTIVITIES

PLEASE CIRCULATE TO ALL INTERESTED EMPLOYEES OF THE BUREAU

PLANT INDUSTRY STATION, BELTSVILLE, MD.

NOVEMBER 1949

FOR ADMINISTRATIVE USE ONLY

To employees of the Bureau:

The purpose of BPISAE RESEARCH ACTIVITIES, we noted a year ago in establishing this administrative letter, is to give you an overall picture of the significant work of this Bureau.

Our research covers an extremely wide range of specialization. It is difficult for the scientist in one field to keep up with progress in each of the other fields. And yet the value of his findings may depend largely on how well they can be integrated with other research results. Integration is essential in the combined approach, which holds the answer to many of our agricultural problems. We believe one way to promote integrated research is by keeping you informed on developments in related studies.

Another side of the picture is in public relations. Even though the work of this Bureau spans the continent, the public expects each employee--clerical and professional--to know something about the progress in the major lines of work. RESEARCH ACTIVITIES is designed to give you the highlights of research and administrative developments. This includes key changes in personnel, retirements, and deaths. Limitations by the Budget Bureau require that in this type of publication news notes on personnel be closely related to official work.

I hope you are finding RESEARCH ACTIVITIES useful. Your suggestions on how it can be improved to meet these objectives and to fill your needs will be appreciated.

Sincerely yours,

Robert M. Salter

Chief of Bureau

McCall Reports on Mission to Africa

Dr. Max A. McCall, assistant chief of the Bureau, returned October 15 from Africa where he spent 3 months on an ECA mission. This was made at the request of the British Colonial Office as a part of the Marshall Plan program. Objective was to assist the Colonial Office in a study of opportunities for research projects on the utilization of resources that can be used to supply food and industrial materials for the colonies and the British Commonwealth.

Dean W. V. Lambert of the Nebraska College of Agriculture headed the mission, and Dr. M. G. Cline, soil scientist of Cornell and an agent of this Bureau, was a member. The American scientists crossed the continent, visiting Kenya, Uganda, Tanganyika, Northern Rhodesia, Southern Rhodesia, Nyasaland, Nigeria, and the Gold Coast. Accompanied by colonial officers, including the director of agriculture in each area, they were given an opportunity to observe agricultural practices, to inspect research facilities, and to become acquainted with the problems calling for research.

Dr. McCall points out that more than 90 percent of farming is on small holdings, and the work is done entirely with hand labor. All research planned must be designed not only for large modern facilities but also to make effective use of present systems of small holdings and to fit in with tribal government. They should require very little investment by the small farmer.

The most serious problem, according to Dr. McCall, is a shortage of trained personnel for research work. Projects recommended for ECA support will very likely include the assignment of American scientists to help in organizing the work and to train others to carry it on. Members of the mission spent 2 weeks in London preparing a report on their findings at the end of the survey.

Progress Noted in Mexican Rubber Program

Top-budding and other techniques appear to have removed the major obstacle to establishing high-yielding, blight-resistant rubber trees in Mexico, Dr. M. H. Langford (RPI) reports. The plantings were started cooperatively by the United States and Mexico in 1940 with a view toward increasing Mexico's rubber production. Many hundreds of hectares are now planted.

During the past year, technicians from this country and Mexico have taken steps to safeguard the trees from leaf blight, which now occurs in the major planting centers. Affected trees are being topbudded with resistant varieties. New budding techniques have resulted in 80 to 100 percent success in experimental trials. Average success in the plantations is about 65 percent, a great improvement over previous practices, which were rarely more than 35 percent successful and often less than 10 percent.

In most areas, the trees grow to top-budding size without being sprayed, but in nurseries and in young field plantings where the level of blight infection is high, copper fungicides are applied at 4- or 5-day intervals during the rainy season. To save time and materials, mist blowers are being substituted for the high pressure pumps used in the past.

Growth Regulators Tested for Ripening Fruit

Bureau scientists are exploring the possibilities of using the new growth regulators as tree sprays to hasten ripening and enhance the size and quality of fruits. Results of two studies of the effects of 2,4,5-trichlorophenoxy-acetic acid were given at the recent meeting of the American Society for Horticultural Science.

Dr. Paul Marth, Dr. Leon Havis, and V. E. Prince reported that 18 varieties of peaches sprayed with 2,4,5-T showed ripening response. Early varieties seemed more sensitive than late ones to the chemical and produced distorted fruit at lower concentrations.

When properly timed in suitable concentrations for the particular variety, 2,4,5-T ripened the fruit several days ahead of normal development. These early ripened fruits seemed, in several cases, equal in size and quality to the untreated ones. Although the final fruit size may be drastically reduced because the fruit enlarged and ripened too early or too rapidly, it seems possible that a formula for using this or other growth regulators alone or in combination may be worked out in such a way as to enhance the final size.

C. P. Harley, H. H. Moon, and Dr. Marth reported that five apple varieties--three early summer and two fall--showed a ripening effect from the spray on both foliage and fruit. Leaf injury was marked on the early season, less severe on the fall varieties.

On apples the spray delayed fruit drop. Unpicked sprayed apples remained on the trees even after the fleshy parts had decayed and fallen away. The chemical did not appear to have any retarding effect on the drop of peaches when fully ripe.

Notes from the Meetings in Milwaukee

Dr. S. L. Emsweller (F&VC&D) succeeds Dr. George M. Darrow as president of the American Society for Horticultural Science. The 1950 meetings will be in Columbus, Ohio, September 11-13.

The distinction of being named Fellows in the Society of Agronomy went to: Dr. Glenn W. Burton (FC&D) for his cytological work leading to the improvement of Sudan, Bermuda, Dallas, and Bahai grass in the Southeast; F. A. Coffman (CC&D) for his outstanding accomplishments in oat breeding, particularly the establishment of the uniform oat nursery experiment that has led to the quick and efficient development of new varieties; G. H. Stringfield (CC&D) for contributions to genetics that have led to the development of outstanding corn hybrids in Ohio; and Dr. Vance Sprague (FC&D) for his work in the physiology of forage crops, particularly temperature and light relationships on growth. The citations were read by Dr. O. S. Aamodt (FC&D), a past president of the Society.

Dr. G. F. Sprague (CC&D) was selected vice-chairman of the crop science section of the Society of Agronomy. The vice-chairman automatically succeeds to the chairmanship the following year.

E. H. Templin (SS) is the new chairman of Section V--Morphology, Genesis, and Cartography--in the Soil Science Society.

Burton and Richards Get Stevenson Awards

Two Bureau scientists received national recognition for outstanding research at the annual meeting of the American Society of Agronomy in Milwaukee in October. They are Dr. Glenn W. Burton, geneticist (FC&D) with the Georgia Coastal Plain Experiment Station, Tifton, and Dr. L. A. Richards, soil physicist (SMI) at the U. S. Salinity Laboratory, Riverside, Calif. The recognition was in the Stevenson citations and \$500 given annually by Professor William Henry Stevenson and his wife, Rosaltha Scott Stevenson, of Ames, Iowa.

Dr. Burton's award was based on his development of Tift Sudan grass, which combines the disease resistance of Leoti sorghum with the fine-stemmed and other desirable characteristics of the Sudan grass, valuable not only for use as a forage plant but also in breeding work. He was also cited for his work in producing coastal Bermuda, a variety greatly superior to common Bermuda in vegetative vigor, in tolerance of frost and foliar diseases, and in immunity to root-knot nematode.

Dr. Richards was given recognition for outstanding contributions to soil physics in general and for (1) devising equipment to measure the atmospheric tension of soil solutions as influenced by salinity; and (2) developing equipment that automatically waters soils at given moisture percentage. He was also cited for his research in the development of rocket-launching devices during the war, when he served as a national defense research fellow at California Institute of Technology.

Fifty Years of Soil Survey

The Soil Science Society of America observed the fiftieth anniversary of the Soil Survey with a special program at which Dr. M. F. Miller, dean emeritus of the University of Missouri, traced the early history, Dr. Emil Truog of the University of Wisconsin discussed the recent history, and Dr. Charles E. Kellogg, head of the Division, outlined opportunities for future development. Three employees, now retired, were given special recognition on the program. These were Macy H. Lapham, J. W. McKericher, and W. E. Hearn.

Mild Boron Deficiency in Citrus Plantings

The probability that at least temporary boron deficiency occasionally exists in Florida citrus plantings has been brought to the attention of the Florida Horticultural Society by Paul F. Smith and Walter Reuther. They described foliage symptoms by which the grower can detect mild deficiency early enough to insert boron in one of the "dormant" spray applications, and correct the condition before current crop yield is reduced. Periods of drought accentuate the boron-deficiency symptoms. Sour orange rootstock, in comparison with others, is a poor supplier of boron from the soil. In the experimental orchard, the Washington Navel orange was much more susceptible than Hamlin or Temple.

ON THE CALENDAR

December 6-8 North Central Weed Control Conference, Sioux Falls, S. Dak.

Hybrids Step up European Corn Production

Tests with American hybrids demonstrate that European corn production can be increased by about 25 percent in many areas and as much as 50 percent in some localities, reports Dr. Merle T. Jenkins (CC&D).

Dr. Jenkins has recently returned from Europe where he spent 3 months assisting in a survey to determine the possibilities of expanding hybrid corn culture in Europe. The study was made under the auspices of OEEC, the general organization linking Marshall Plan countries. Dr. Jenkins and his colleagues--Dr. W. F. Watkins and Dr. Carl E. Ferguson of ECA--conferred with agricultural workers and inspected experimental and farm plantings in Italy, Turkey, Greece, France, Austria, the Netherlands, Belgium, Switzerland, Portugal, and Western Germany. They noted considerable progress in the hybrid corn program initiated after the war by UNRRA and continued by the Food and Agricultural Organization of the United Nations. Dr. Jenkins has made two trips to Europe as a technical consultant on this program for FAO.

On the basis of the survey, the scientists recommend the replacement of all open-pollinated varieties with adapted hybrids. This will require an expansion in the testing of hybrids and in farmer education in the use of them. Over the long range, breeders in those countries will need to develop hybrids from locally adapted inbred lines to meet specific insect and disease problems.

Dr. Robert C. Eckhardt (CC&D) is now in Europe assisting research workers in setting up the expanded program. On loan from the Bureau to OEEC, Dr. Eckhardt will return to his post at State College, Miss., the first of the year.

Seed Treatments Protect Rather than Stimulate

Increased yield that often follows cereal seed treatments to control seed-borne diseases is the result of disease control rather than direct growth stimulation, according to preliminary findings in a study made by John W. Taylor and R. W. Leukel (CC&D).

They used seed of Purplestraw wheat, free from bunt and relatively free from other seed borne pathogens to determine whether chemical treatment would significantly increase the yield when conditions are favorable for germination and emergence.

The seed was sown on October 18, 1948, at the rate of 6 pecks an acre in blocks of three rod rows each. These were replicated five times for each treatment and for the check. The soil was a fairly uniform Keyport silt loam, low in organic matter. It had been planted alternately to cereals and green-manure crops of soybeans and rye.

In no case was the difference between the yield from treated seed and that from untreated seed of statistical significance. It is possible, however, that in some soils high in organic matter and infested with certain pathogens, an effective treatment applied to apparently disease-free seed of small grains may increase yields because of its protective effect against the soil-borne pathogens.

Further Research Needed on Use of Raw Phosphate in Northeast

Carefully planned long-time experiments are needed to show the place, value, and usefulness of raw phosphate in programs for the improvement of New England pasture and grass lands.

That is the consensus of New England experiment station agronomists in a survey made by Dr. M. S. Anderson and K. D. Jacob (FAL) on results of experimental work with raw phosphate as a fertilizer in the Northeast. Dr. Anderson and Mr. Jacob have reviewed, evaluated, and summarized these results in Plant-Food Memorandum Report No. 19. They prepared this at the request of PMA officials for distribution to the conservation branch and have a limited number of copies available for interested Bureau staff members.

Very few quantitative studies have been made of the comparative effects of raw phosphate and superphosphate on yields of pasture and hay, they point out. In a 45-year experiment at the Rhode Island station when mixed hay was grown for 7 years, raw phosphate and superphosphate were about equally effective as sources of phosphorus when compared on the basis of equal cost of P_2O_5 . Considerably higher yields of hay were obtained with superphosphate on the basis of equal quantities of P_2O_5 .

Qualitative tests of raw phosphate and superphosphate on pasture and permanent grassland have been conducted by the Connecticut station. Visually, the results with raw phosphate appeared to be equal or superior to those with superphosphate. The rates of application in these tests, however, are not known. A few observation trials with raw phosphate on hay and pasture have been made in Maine, but no actual comparative data obtained.

New experiments should include comparisons of raw phosphate with the superphosphates and other so-called "available" phosphates on the basis of equal quantities of P_2O_5 . The experiments should also include the use of raw phosphates in conjunction with the readily available forms of P_2O_5 .

Recent Introductions of Foreign Grapes

More than 500 foreign grape varieties have recently been offered to Federal, State, and commercial grape specialists by the Division of Plant Exploration and Introduction. The collection represents 2 years of intensive work by the Division, either directly or in cooperation with others.

The list contains varieties from 11 countries--the largest numbers coming from Afghanistan, Greece, Italy, and France. Some 76 varieties developed by the noted Italian grape breeder, Luigi Pirovano, and 218 French-American hybrids representing selections by 14 French grape breeders are of special interest to research workers in this country who wish to test wine and table grapes in the eastern half of the United States.

A recent quarantine set up to guard against virus diseases requires that all grapes introduced from Europe must be grown under observation for one season in quarantine greenhouses at Glenn Dale, Md. As a result, the number of introductions is governed by the growing space available. It will probably be several years before all the promising French-American hybrids are introduced and made available.

Bureau Progress Featured on Radio Broadcasts

The American Broadcasting Company focused attention on Bureau research in the American Farmer programs of October 15 and October 29.

The first broadcast presented Supt. D. A. Savage and his colleagues at the thirteenth annual range and crop improvement field day of the U. S. Southern Great Plains Field Station, Woodward, Okla., when 10,000 farmers and stockmen from 16 states were on hand to review the latest research findings. The program was recorded on tape recorder at Woodward and broadcast by transcription the following Saturday.

The October 29 broadcast highlighted two features of the Milwaukee meetings: Dr. George M. Darrow in a discussion of polyploidy in fruit breeding--the subject of his presidential address before the American Society for Horticultural Science; and Dr. Roy W. Simonson in a report on fifty years of soil survey. This program was broadcast directly from Chicago.

COMING EVENTS

December 17 Formal opening of the U. S. Branch Cotton Ginning Laboratory
 at State College, N. Mex.

Turf Developments Shown in Annual Field Day

Grass and turf specialists from 16 states and Scotland attended the second annual turf field day held at Plant Industry Station, October 19, under the direction of Dr. Fred V. Grau, U. S. Golf Association, and members of the staff (FC&D). Among the highlights were:

(1) Inspection of the Alta fescue lawn seeded September 1947. Although not the perfect turf grass, Alta fescue has proved valuable for large lawns, roadsides, athletic fields, airports, and other turf areas where close-knit turf and fine texture are not of paramount importance. It is generally used in combination with other grasses and has largely replaced redtop and ryegrass because it is less competitive. Deep-rooted and drought tolerant, Alta fescue is a good cool season companion to Japanese lawngrass.

(2) Demonstrations of methods of planting zoysia and Bermuda grass. One of these showed how 1 ounce of zoysia seed in the greenhouse in November will provide enough seedlings to plant 5 acres in the spring by setting the seedlings on 2-foot centers. Another method uses the mole-drain to cut narrow furrows in established turf for setting sprigs, which are then rolled down with the wheel of the tractor. This technique of replanting without interruption of use of the area is expensive but valuable, because it assures permanence.

(3) Inspection of fertilizer trials with urea-form, a combination of urea and formaldehyde containing 38 percent of nitrogen. This new experimental fertilizer results in a slow, steady growth and one application is enough for an entire season in this area.

To Study Rice Drying by Radio Frequency

An RMA cooperative study on the use of radio-frequency dielectric heating for drying and conditioning rice has been inaugurated by the Division of Farm Electrification and the Louisiana Experiment Station. Finis T. Wratten, engineer in charge for BPISAE, was formerly an instructor at Louisiana State.

At present most rice is combined when the kernels are too moist for safe storage. The grain is then commonly dried by a warm air draft and this must be done gradually by several turns through the drying unit. If faster rates are used the grains will shatter in the milling process.

In radio-frequency dielectric heating the heat is generated within the material itself by absorption of energy from an alternating electric field. With most other types of heating the temperature of the inner material can be raised only by thermal conduction from outside. In dielectric heating the temperature can be raised evenly and with extreme rapidity. It is possible that rice can be dried by this method economically and without the undesirable effects of surface checking that causes the grains to shatter. This could also apply to corn, small grains, and grass seeds.

Plans for the new project include the application of radio-frequency power at various frequencies and time intervals to different types and varieties of rice selected at successive stages of harvesting. The treated samples will then be inspected for microscopic surface checking, vitamin content, comparison of taste when cooked, germination, and fatty acid content.

Pine Disease Scouted by Plane

Scouting by plane this past summer, forest pathologists made a rapid survey of the spread of pole blight, a serious disease of Western white pine in the northern Rockies.

Fortunately the disease can be observed at rather long range. The pine is readily distinguished from neighboring species by the bluish tinge of its foliage and characteristic whorling of its branches. The disease shows up in yellowing and sparseness of foliage.

The first scouting flight was made August 11, 1949, by Dr. Lake Gill (FP) who is in charge of the investigations. Later flights were made by Ernest Wright, George Englerth, Craig Bryan, and Marvin Fowler. They used Piper and Stinson planes under Forest Service contracts. They inspected drainages of white pine stands on the contour by flying along the ridges from 500 to 1,000 feet above the trees and then dropping down the slopes about 500 feet for each successive tour. After locating suspected pole blight stands with field glasses from the plane, they noted the areas on a large-scale map. Ground examinations were then made in these areas to determine whether pole blight or some other injury caused the symptoms.

At the outset of the survey, pole blight was known to occur in parts of the forested area from British Columbia through northern Idaho. When the results of the survey were checked with former data, all previously known locations near the southern limits of the disease were confirmed and several new locations had been added. Another summer will be needed to complete the scouting of commercial stands.

NOVEMBER 1949

Refrigeration Project at Three Locations

To determine modern requirements for refrigeration on the farm, a three-part study has been initiated by the Farm Electrification Division and the Bureau of Human Nutrition and Home Economics. Harry L. Garver is the agricultural engineer in charge.

At Beltsville, Paul Davis, BPISAE engineer, and Paul James, physicist with BHNHE, have built a farm-type, general purpose, walk-in refrigerator with three compartments--one for frozen storage at zero, a chill or general purpose storeroom at 35° F., and an egg storage compartment. Tests will determine suitable design factors for farm refrigerators.

At College Station, Texas, P. T. Montfort and Joe Hollingsworth are testing a refrigerator designed on the basis of findings in a survey made in Texas last winter. Following studies in the specially built constant temperature room at College Station, the refrigerator will be tested in actual farm use.

At Pullman, Wash., M. C. Ahrens is studying existing refrigeration to determine how the equipment is used on the farms and in relation to community locker plants. A 1949 survey in the State indicates that nearly 4,500 people intend to buy farm freezers.

Results of the study will aid manufacturers and farmers in building all-purpose and farm refrigerators. Present engineering data in refrigeration manuals and handbooks are based entirely on the operation of commercial and industrial storages.

New Varieties Extend Blueberry Season

One of the chief objectives in the blueberry breeding program, notes Dr. George M. Darrow (F&VC&D), is the creation of varieties to fill seasonal gaps and to extend the season of the cultivated crop. Most of the popular blueberry varieties now grown commercially were originated by the late Dr. F. N. Coville of this Bureau. Two new varieties introduced by Dr. Darrow and Franklin A. Gilbert, research associate of the New Jersey Experiment Station, meet important seasonal needs.

The Berkeley, which has berries larger than any variety now in the trade, fills a midseason gap. It ripens about a week after the well-known Stanley variety and a week before the popular Jersey. The Coville is later than any variety now in the trade. The berries are almost as large as Berkeley, firm, of tart flavor until fully ripe, and with a high aroma.

The new varieties originated from selections and crosses made by Dr. Coville in the large experimental planting started at Weymouth, N. J., about 30 years ago. Stock of both new varieties has been relatively easy to propagate. Both develop vigorous and very productive bushes. The berries in each case are produced in rather open, loose clusters.

The Berkeley has been tested as U-85, the Coville as DN-76. The two new varieties are recommended for trial in commercial plantings from Maryland to New Jersey. The Berkeley has also shown promise in Michigan. The Coville is under study there. Neither variety can yet be recommended as far south as North Carolina.

Introduced Cherry Varieties of Interest to Breeders

Some 200 foreign cherry varieties introduced just prior to World War II and now fruiting at the Plant Introduction Garden, Chico, Calif., offer an excellent source of plant-breeding material, points out C. O. Erlanson (PE&I).

The varieties were collected in 13 countries, with the largest groups coming from Germany, France, and Italy. About two-thirds of the introductions are sweet types. It is possible that some of them may prove worthy of commercial tests. They are of particular interest to pathologists who are studying the virus diseases of cherry.

Horticulturists of the Oregon Experiment Station have established practically the entire collection at Corvallis for use in an extensive cherry-breeding program.

PERSONNEL NOTES

Pentzer Heads HTS Section

Wilbur T. Pentzer (F&VC&D) has been named to succeed the late Durward F. Fisher as head of research on handling, transportation, and storage of fruits and vegetables.

Mr. Pentzer joined the Bureau in 1926 to carry on physiological research on storage and handling problems. A native of Lincoln, Nebr., he holds a bachelor's degree from Oregon State College and a master's degree from Iowa State. He has been in charge of the Bureau's laboratory at Fresno, Calif., for the past 20 years except for a few months' leave to handle investigations of spray removal from apples in New York State in 1933-34.

Well-known for his research and leadership in investigations on deciduous fruits and vegetables and market diseases of these crops in the Southwest, Mr. Pentzer has published many articles on his findings. He developed a method to provide a constant supply of SO₂ to fumigate grapes while in transit or storage. His methods of precooling, ventilating, and refrigerating produce while in transportation are in general use in this area.

Dr. Harold T. Cook will serve as assistant head of the section, with responsibility for the pathology phases of the research.

Barnes to ARA

Dr. Carleton P. Barnes, in charge of research on soil uses and productivity for the Division of Soil Survey since 1944, has transferred to the Agricultural Research Administration to serve as coordinator of research in natural resources.

Educated at the New York State College of Forestry with graduate work in geography at Clark University, Dr. Barnes has been with the Department for 20 years. His government experience includes work in land economics with BAE and with the Resettlement Administration. He came to the Bureau from the Office of the Secretary, where he was associate land-use coordinator.

L. W. Kephart to World Bank

Leonard W. Kephart, weed control specialist and a Bureau staff member since 1913, has joined the World Bank as an agricultural counselor. His headquarters are in Washington, but he will be traveling much of the time. His first assignment is with a special mission to Siam and India.

Coming to the Bureau shortly after his graduation from Cornell University, Mr. Kephart did research first in weed control and then in the breeding and development of clovers, particularly sweetclover. From a plant-collecting trip to East Africa in 1927-28 he brought back weeping lovegrass, now grown extensively in the Southwest.

Mr. Kephart has been in charge of weed control research in the Division of Cereal Crops and Diseases since 1936. This section developed the first practical process for controlling bindweed and similar deep-rooted spreading perennial weeds, based upon a detailed knowledge of the habits and physiological processes of the plant. This was the so-called delayed tillage method of permitting perennial weeds to grow for 10 days or 2 weeks before cutting them. Mr. Kephart's section was also one of the first to test 2,4-D. During the past 2 years the work of the section has been considerably expanded under Research and Marketing funds.

Bennett Cited by Texas Ginners

Charles A. Bennett, principal agricultural engineer in charge of ginning investigations at the U. S. Cotton Ginning Laboratory, Stoneville, Miss., was selected by the Texas Cotton Ginners' Association for special recognition in September.

He received an award, which reads, "For the high esteem in which ginners throughout the Cotton Belt hold him, together with the professional engineering contributions made to the art of ginning, including the invention of new machines and development of auxiliary processes of ginning and the encouragement of their use for the good of the cotton industry and southern agriculture in general."

The Association is the largest organization of ginners in the world. Its membership of 2,000 represents 8,500 gins in this country. The members are leaders in supporting public research in the cotton industry and in bringing benefits of research into rapid and widespread use. A train-long cavalcade of Texas ginners visited the Laboratory last June.

RETIREMENTS

Wilbur R. Leighty (TM&SC) retired July 31 after 28 years of service as a chemist. He began his work in the Division of Soil Fertility and transferred in 1939 to Tobacco Investigations. He specialized in the micro-element composition of tobacco. He was stationed at Beltsville in recent years. Prior to that he was located for a time in Florence, S. C., where he worked on the composition of flue-cured tobacco.

DEATHS

Dr. Royall O. E. Davis, principal chemist and administrative assistant in the Soils Division, died from a heart attack Sunday, October 30. He was 69 and had planned to retire in November.

Dr. Davis was born in Newberry, S. C. He was a graduate of the University of North Carolina. He received the PhD degree from that institution in 1903. After a year at the University of Leipzig in Germany, he returned to the University of North Carolina as an instructor and later served as an assistant professor of chemistry.

His research for the Department began in 1909 when he was placed in charge of soil-water investigations. From 1914 to 1926 he directed the work of the Division of Soil Physics. He was one of the first soil scientists in this country to call attention to the dangers of erosion and the need for studies to control erosion.

During World War I, Dr. Davis conducted research on fixation of nitrogen by the Haber process for the synthesis of ammonia. A pilot plant constructed under his direction at the Arlington Farms Research Station was the first of its kind in this country. His research on ammonium nitrate as a fire hazard and its control for safe use on farms was an outstanding contribution. Among other important problems he investigated in soil physics and fertilizer chemistry were phospho-platinum, ammonia compounds, the atomic weight of thorium, corrosion of iron, soluble salts in soil, ammonia absorbents, urea synthesis, and ammoniation of peat. He had published 80 articles and bulletins on his findings.

He was a member of the American Chemical Society and served as associate editor of Chemical Abstracts from 1915 to 1918. He was also a member of the American Society of Agronomy, the Soil Science Society of America, the International Society of Soil Science, and the Cosmos Club. He was a member of the Methodist Church and a Mason. Dr. Davis leaves his widow, Mrs. Birdie Pritchard Davis of the home, 7130 Alaska Ave., N. W., Washington.

Raymond B. Wilcox (F&VC&D), plant pathologist stationed at the State Cranberry Laboratory, Pemberton, N. J., died from a heart attack while attending a football game at Lafayette College, Easton, Pa., October 22, 1949. He was 60.

Mr. Wilcox joined the Bureau in July 1913. He had been stationed at the Pemberton Laboratory since 1928, conducting investigations on diseases of cranberries and blueberries. With others he contributed to the development of new and improved varieties of cranberries through tests to determine resistance of seedlings to the false-blossom disease. He also made extensive studies of the life history of the sclerotinia disease of blueberries and conducted storage tests to determine the relative keeping qualities of both blueberries and cranberries. Results of his studies on the cause of the decline of the black raspberry industry in Ohio served as the basis for a practical means of control for the virus disease "streak." He was the author or co-author of about 50 scientific articles.

A native of Kiowa, Kans., Mr. Wilcox attended Washington University, St. Louis, and was graduated from the University of Wisconsin. He was a member of the American Phytopathological Society, American Society of Plant Science, the American Society for Horticultural Science, and the Congregational Church. He leaves his widow, Mrs. Hazel Hoag Wilcox; a son, Robert; a daughter, Mrs. Russell W. Strickland of North Creek, N. Y.; a brother Dr. Arthur N. Wilcox of the University of Minnesota.

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 * PUBLICATIONS *
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Recent Bureau Press Releases

Copies of the following releases may be obtained from Press Service, Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

Date	Subject
October 2	Crop Diseases Catch Up with Alaska
3	Test with Dairy Cows Emphasize Need of Cool Water
5	Low Temperature is Quality Factor in Prepackaged Sweet Corn
8	Ranchers Review Research Findings at Woodward (Okla.) Field Day Longer Harvest Period is Possible for Industrial-Type Sweetpotatoes
16	Breeding Strawberries with Aroma Congo, a New Shipping Watermelon
17	Scientists Plan to Celebrate Half Century of Soil Survey
21	RMA Study Measures Quality in Potato Chips
23	Science Studies Rot Resistance of Locust New Potato Has Multiple Disease Resistance
25	Plant Diseases Still Very Much in Farm Picture Two New Blueberry Varieties Introduced
26	Better Soil Knowledge Needed to Feed World Tracers Measure Plant Use of Phosphorus from Rock Phosphates
27	Raymond B. Wilcox, USDA Research Worker on Cranberry Diseases, Dies
28	New Plant Breeding Technique Holds Great Promise for Fruit Improvement
31	New Bulletin is Guide to Home Fertilizer Mixer

Departmental

Farmers' Bulletin 1520 (rev.)	- Soybeans: Culture and Varieties
Farmers' Bulletin 1720 (rev.)	- Adobe for Farm Buildings
Farmers' Bulletin 2007	- Mixing Fertilizers on the Farm
Circular 814	- New Sources of Resistance to Stem Rust and Leaf Rust in Foreign Wheat Varieties of Common Wheat
Circular 826	- Storage of Dry Shelled Corn in Farm Type Bins
Technical Bulletin 984	- Decay Resistance of Black Locust Heartwood
Technical Bulletin 991	- Effect of Freezing Temperatures on Different Varieties of Sugarcane and the Millability of Damaged Cane in Louisiana

Other Agency and State Bulletins by Bureau Scientists

- Altman, L. B. Jr. A new type curing barn. N. C. Agr. Expt. Sta. Res. and Farming, July 1949.
- Brown, O. A., and Weldon, N. W. Tight barns for tight budgets. N. C. Agr. Expt. Sta. Res. and Farming, July 1949.
- Gaston, H. P., and Hurst, W. M. Fruit packing houses, plans and operations. Mich. Agr. Expt. Sta. Spec. Bul. 362, October 1949.
- Siggers, Paul V. Only 7 of 789 rust infected seedlings live. Miss. Farm Res. September 1949.
- Stone, R. B. Jr. Halve your fuel costs. N. C. Agr. Expt. Sta. Res. and Farming, July 1949.

Outside Publications

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